The Dark Side of Manager Narcissism:

Evidence on Target Level and Employee Dysfunctional Behavior

Abstract: We examine whether managers' narcissism affects their decisions about performance targets and the dysfunctional behaviors of their subordinates. Dysfunctional behaviors occur when employees act to increase their performance and payoffs at the expense of their firm's interests. Although dysfunctional behaviors are common and costly to firms, there is limited evidence on why these behaviors occur. Using a field-based dataset, we find that manager narcissism has both direct and indirect associations with employee dysfunctional behavior. In particular, managers with a higher degree of narcissism tend to set higher performance targets for their subordinates, which in turn lead to more employee behaviors that are dysfunctional. Besides this indirect association, we find manager narcissism also has a direct positive association with employee dysfunctional behavior. Our findings contribute to the management accounting literature and business practices by documenting that narcissism, a personality trait that is ubiquitous among managers, plays an important role in affecting managers' control choices and the behaviors of lower-level employees.

Keywords: manager narcissism; performance target; employee dysfunctional behavior

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1. Introduction

Narcissism is a personality trait that is ubiquitous among managers (Maccoby 2000; Resick et al. 2009). While narcissistic managers are often perceived as productive, creative, and influential, they also tend to be self-focused, exploitive, and even unethical (Chatterjee and Hambrick 2007; Ham et al. 2017). Recent research has demonstrated that manager narcissism is associated with undesirable corporate decisions such as overinvestment and financial misreporting (Ham et al. 2017; Ham, Seybert, and Wang 2018). While prior studies have focused on managers' narcissism and their investment, reporting, and strategic decisions, there is limited evidence about whether narcissism influences managers' control choices and the behaviors of their subordinates. We address this question by investigating the association between manager narcissism and employee dysfunctional behavior.

Employee dysfunctional behavior refers to the actions of employees that increase their own short-term performance and payoffs, but hurt the long-term interests of their firms (Jaworski and Young 1992; Ramaswami 1996). From overbilling to bank-account fraud to the violation of health or safety codes, employee dysfunctional behavior commonly exists and causes economic and reputational damage to firms. However, despite the negative influences of these behaviors, there is limited understanding on why they occur (Jaworski and Young 1992; Mayer, Kuenzi, and Greenbaum 2010). We examine whether managers' narcissism explains the dysfunctional behaviors of their subordinates. Given that narcissistic managers prioritize achievement and success over rules, ethics, and others' interests (Young et al. 2015; Ham et al. 2017), they may tolerate dysfunctional behaviors that can increase short-term performance. Further, given that narcissistic managers tend to be outcome driven, exploitative, overconfident, and dominant (Paulhus and Williams 2002; Young et al. 2015), they may choose high target levels that are overly difficult for their subordinates to achieve. Evidence suggests that high targets could motivate employees to engage in dysfunctional behaviors (Welsh and Ordóñez 2014a, 2014b; Carucci 2016; Niven and Healy 2016). In this

study, we examine whether managers' narcissism affects their subordinates' dysfunctional behavior directly and/or indirectly through managers' decisions about target levels.

We investigate the link between manager narcissism, target level, and employee dysfunctional behavior using a field-based dataset. Our research site is a general public hospital in China. Following government policies, Chinese hospitals implement performance targets to reduce the excessive use of medicines. However, evidence suggests that the implementation of performance targets is followed by a general increase in doctors' dysfunctional behaviors that increase their performance but hurt the interests of their hospitals and patients (Yan, Xia, and Zhang 2015). In our research site, department managers set performance targets for each of their subordinate doctors on a monthly basis. This setting provides us with an opportunity to examine whether managers' narcissism and their choice of target level play a role in explaining employee dysfunctional behavior. We investigate this question using archival and personnel data from 2014 to 2016. We examine whether managers' narcissism affects their choice of target level, and whether the target level in turn influences employee dysfunctional behavior. We also investigate whether manager narcissism has a direct association with employee dysfunctional behavior, after controlling for the effect of target level. We conduct panel analyses at both the manager and doctor levels, as well as an event study using a government policy released in 2015 that reinforces the importance of performance targets in Chinese hospitals.

Following recent studies, we use the size of managers' signatures to measure the degree of their narcissism (Ham et al. 2017; Ham, Seybert, and Wang 2018). Our results suggest that manager narcissism has both direct and indirect associations with employee dysfunctional behavior. We first document that managers with a higher degree of narcissism tend to set higher targets for their subordinates, especially after the implementation of the 2015 government policy. We then find that target level is positively associated with employee dysfunctional behavior. Further, after controlling for target level, we find that manager narcissism has a direct positive association with employee dysfunctional behavior. Taken together, our results suggest that manager narcissism is associated with employee dysfunctional behavior both directly and indirectly via managers' choice of target level.

Our findings make several contributions to the existing literature. First, we add to the emerging literature on manager narcissism. Prior studies find that manager narcissism plays an important role in explaining firm-level decisions and outcomes, such as financial reporting, investments, and firm performance (Chatterjee and Hambrick 2007; Olsen, Dworkis, and Young 2013; Young et al. 2015; Ham et al. 2017; Ham, Seybert, and Wang 2018; Buyl and Wade 2019). Recent work also provides evidence that manager and subordinate narcissism influences a manager's review of a subordinate's accounting estimate (Hayes and Reckers 2019). However, there is limited evidence about whether manager narcissism also influences firms' internal operations, especially the design and implications of management control mechanisms. We address this question by documenting the effects of manager narcissism on performance-target levels and the dysfunctional behaviors of lower-level employees.

Second, we add to the target setting literature (e.g., Arnold and Artz 2015; Ioannou, Li, and Serafeim 2015; Bouwens and Kroos 2016) by demonstrating that narcissism, a personal trait of managers, plays an important role in affecting managers' choice of target level. Our findings also speak to the literature about the "hidden costs" of management control. Recent research shows that management controls such as monitoring and incentives could lead to unintended outcomes (e.g., Akerlof and Kranton 2008; Cardinaels and Yin 2015). We add to this literature by documenting the "potential costs" of using performance targets to motivate employees. That is, increasing target level may lead to more employee dysfunctional behaviors.

Third, we add to the literature on dysfunctional behavior. Although there are many studies about the dysfunctional behaviors of senior executives, especially in relation to misreporting (e.g., Burns and Kedia 2006; Jia, van Lent, and Zeng 2014; Ham et al. 2017; Marquez-Illescas et al. 2017), there is less research on the dysfunctional behaviors of lower-level employees. In particular, there is limited evidence on why employees choose to engage in dysfunctional behaviors, or whether it can be explained by managers' characteristics and control decisions (Jaworski and Young 1992; Mayer, Kuenzi, and Greenbaum 2010). Our study addresses this question by documenting the important role of managers' narcissism and their choice of target level in explaining the dysfunctional behaviors of lower-level employees. In this regard, our study also has practical implications. Our findings suggest that firms need to be aware that managers'

narcissism has a significant effect on these managers' control choices and the behaviors of their subordinates. Therefore, top management teams should consider these factors when making decisions such as promotion, employee selection, department or group structure, and delegating decision rights over target design.

The remainder of this paper is structured as follows. Section 2 reviews the literature on manager narcissism. Section 3 describes our research site and Section 4 develops the hypotheses. Section 5 presents the research method. Section 6 presents and discusses our findings. Section 7 concludes the paper.

2. Literature on Manager Narcissism

Narcissism is a psychological sense of self-focus and uniqueness. Narcissists believe they are superior to others, and they are constantly seeking recognition, affirmation, and praise to maintain their inflated sense of self. To fulfill their psychological needs, narcissists are willing to take any actions to demonstrate their ability, status, dominance, and superiority, even when doing so is damaging to the interests of others (Paulhus and Williams 2002; Resick et al. 2009; Young et al. 2015; Ham et al. 2017; Ham, Seybert, and Wang 2018). Narcissists are usually exploitative and believe that rules do not apply to them. As a result, they are willing to violate rules, ethics, and social norms to achieve their goals (Young et al. 2015; Ham et al. 2017). Evidence indicates that narcissism is associated with unethical behaviors such as white-collar crime and academic cheating (Blickle et al. 2006; Menon and Sharland 2011).

Prior studies on manager narcissism focus on senior executives.[1] For example, Ham et al. (2017) find that chief financial officer (CFO) narcissism is associated with more earnings management, less timely loss recognition, weaker internal control quality, and higher probability of restatements. Prior studies also find that although chief executive officer (CEO) narcissism is associated with higher reported earnings, it also relates to negative firm outcomes such as overinvestment, volatile performance, and lower financial productivity (Chatterjee and Hambrick 2007; Olsen, Dworkis, and Young 2013; Ham et al. 2017; Ham, Seybert, and Wang 2018). Besides its effect on firm-level decisions and outcomes, manager narcissism may

[1] In its most severe form, narcissism can be a personality disorder—narcissistic personality disorder (NPD). However, individuals can (more or less) evince narcissistic characteristics or traits without suffering from NPD (Chatterjee and Hambrick 2007; Young et al. 2015). We follow prior studies and consider narcissism a scalar construct that ranges from low to high.

also influence firms' internal operations and employee behavior. Prior research indicates that managers' preferences and practices significantly influence the attitudes and behaviors of their subordinates (Mayer, Kuenzi, and Greenbaum 2010). Narcissistic managers prioritize personal benefits and achievement over rules, ethics, and others' interests (Young et al. 2015; Ham et al. 2017), and may therefore motivate their subordinates to engage in dysfunctional behaviors to achieve high performance. However, given the lack of empirical evidence, there is limited understanding on whether and how manager narcissism is associated with employee dysfunctional behavior.

Our study uses an archival field dataset to provide evidence on these questions. We first investigate whether managers' narcissism affects their control decisions. In particular, we examine whether managers' narcissism affects the level of the performance targets they set for their subordinates. We focus on performance targets for two reasons. First, narcissistic managers tend to be overconfident, outcome driven, exploitative, and dominant (Chatterjee and Hambrick 2007; Ham et al. 2017). These features could make them set high performance targets for their subordinates. Second, experimental and anecdotal evidence suggests employees are motivated to engage in dysfunctional behaviors when their performance targets are set too high (Welsh and Ordóñez 2014a, 2014b; Carucci 2016; Niven and Healy 2016). Therefore, we investigate whether there is a link between manager narcissism, performance-target level, and employee dysfunctional behavior. Besides setting high performance targets, narcissistic managers may also foster a working environment that tolerates (or even encourages) dysfunctional behaviors that can increase short-term performance. Therefore, we also explore whether manager narcissism has a direct link with employee dysfunctional behavior.

3. Research Site

3.1. Overview

Our research site is a Chinese public hospital called *Spirit*.[2] It is a general hospital located in one of the major urban areas of southern China. It has a total number of 1,300 doctors, nurses, and administrative staff,

[2] For reasons of confidentiality, we use the anonymous name *Spirit* instead of the real name of the hospital.

26 clinical departments and 700 beds. The size, structure, and administrative and management systems of *Spirit* represent those of typical Chinese general hospitals. The hierarchical structure of *Spirit* is also similar to that of other Chinese public hospitals. That is, the top management team of the hospital makes control decisions and the department managers are responsible for the execution and implementation of these decisions. Each department has one department manager and multiple doctors who are under the direct management of the department manager. Doctors are not involved in the hospital or department decision-making process, but follow the rules and requirements specified by the upper-level management and work toward the targets set by their department managers.

Spirit has a stable external and internal operating environment. The Chinese Government has very strict rules for entry into the medical service industry. Additionally, given that *Spirit* is one of the major hospitals in the local area, there is always a high demand from patients seeking treatment in this hospital. Further, *Spirit* has been operating for more than 60 years, and has a stable control and operating environment. Additionally, the staff turnover rate is very low in *Spirit*. For example, its staff turnover rate was lower than 5% in 2016.

3.2. Performance Targets

An important feature of Chinese hospitals is their adoption of the medicine-proportion target. The term "medicine proportion" refers to the ratio of medicine sales to the total revenue of a hospital. Chinese hospitals assess and set targets on their medicine proportion to control doctors' use of medicines. Specifically, overusing medicines to increase income was once a problem in many Chinese hospitals.[3] To reduce the overuse of medicines and make medical services more affordable to patients, the Chinese Government released a series of policies. Since 2009, the Chinese Government has required hospitals to assess and control their medicine proportion. Following this policy, many hospitals began to incorporate a medicine-proportion target into their performance-measurement and reward system. In May 2015, the Chinese Government made an announcement urging hospitals to further reduce their medicine proportion.

[3] Chinese hospitals have their own pharmacies. Patients usually need to purchase medicines from the hospital where they obtain the prescription. Therefore, medicine sales have been an important income source for Chinese hospitals.

This policy required 200 hospitals in specified urban areas (including *Spirit*) to reduce their medicine proportion to 30% or lower by the end of 2017 (General Office of the State Council in China 2017; Tang et al. 2018).

In *Spirit* (and in most Chinese public hospitals), medicine proportion is implemented at both the department and individual levels. At the department level, the hospital sets a medicine-proportion target for each department (hereafter, the "department target"). The attainment of the department target is a key determinant of the bonuses allocated to a department. The department target does not vary across time unless there is a change in government policy (e.g., the 2015 policy). To achieve the department target and motivate doctors to reduce the medicine proportion in their daily operations, department managers set a medicine-proportion target for each subordinate doctor on a monthly basis (hereafter, the "individual target"). Doctors' attainment of their individual target is linked to the performance bonuses they receive.

In particular, managers and doctors in *Spirit* receive both fixed payments and performance bonuses. The fixed payment is determined by their job positions, while the bonuses are linked to department profitability as well as individual performance on medicine proportion and efficiency. Every month, the hospital assigns a "bonus pool" to each department. The bonus pool is calculated as a percentage of the profit that is earned by a department, and is adjusted based on the department's overall performance on efficiency and medicine proportion.[4] The department managers then allocate the bonus to themselves and each doctor based on the following factors: (1) individual performance on pre-specified measures that are related to operational efficiency (e.g., number of patients treated and average length of patients' hospitalization); (2) attainment of the individual medicine-proportion target.[5, 6] Given the stable operating environment of *Sprit*, doctors' performance on the efficiency measures are relatively stable and predictable. In comparison, the attainment

[4] The efficiency of a department is calculated based on its bed-turnover rate and number of patients, and is not linked to any pre-specified target.

[5] Doctors' bonuses are linked to their attainment of the individual medicine-proportion targets. However, managers do not have individual medicine-proportion targets, so their bonuses are linked to the attainment of the department medicine-proportion target.

[6] This bonus allocation method is specified by the hospital, and does not require (or allow) managers' discretion or subjectivity.

of the medicine-proportion target plays an important role in determining bonuses and non-financial rewards (e.g., recognition from one's superior or opportunities for promotion) received by doctors and managers. Overall, department managers are motivated to influence their subordinates' behaviors to achieve the department medicine-proportion target. Doctors are also motivated to take actions to achieve their individual target by lowering their medicine proportion in daily practices.

3.3. Employee Dysfunctional Behavior

Doctors in Chinese public hospitals can reduce the medicine proportion through two practices: desired practice and dysfunctional practice. The desired practice is to lower medicine sales by reducing the use of medicines. This practice is aligned with the goal of the government, the interests of the patients, and the reputation of the hospital. However, this practice has two limitations. First, it reduces the total revenue and the "bonus pool" of a department. Second, the goal set by the government (i.e., 30% by the end of 2017) is rather challenging for most hospitals.[7] To achieve this goal, hospitals and managers tend to set high targets that cannot be easily achieved by reducing the use of medicines.

Besides reducing the use of medicines, doctors may also choose to engage in the dysfunctional practice, which is to increase the non-medicine sales by charging patients for unnecessary examinations and treatments. This practice enables a department to achieve a lower medicine proportion without sacrificing its revenue. However, it increases the costs for patients and will damage the reputation of the hospital in the long term. Anecdotal evidence indicates that charging patients for unnecessary examinations and treatments has become a common and severe problem in Chinese hospitals. Consequently, medicine proportion continues to decrease but the medical costs for patients do not decrease as much because the non-medicine cost has rapidly increased (Zhang et al. 2015; Yang 2018).

[7] From 2009 to 2015, the average medicine proportion in Chinese general hospitals decreased from more than 50% to approximately 40%. However, further reducing the medicine proportion to 30% by 2017 is very difficult for most hospitals, and it imposes a great deal of pressure on hospitals' profitability.

3.4. Research Context and Advantages

To summarize our research context, the medicine-proportion target adopted in Chinese hospitals provides doctors with the potential motivation to engage in dysfunctional behaviors. Our study explores whether manager narcissism may exacerbate this problem. In particular, we examine whether department managers' narcissism affects doctor dysfunctional behavior directly and/or indirectly through the target level that managers set for their subordinate doctors.

Our setting has several research advantages. First, department managers in our setting have limited options to influence the behaviors of their subordinate doctors. Besides choosing the level of individual targets and interacting with doctors in daily operations, department managers have no discretion to change the current control mechanisms or implement new ones because of the hierarchy and regulation in Chinese hospitals. Similarly, the doctors in our setting have limited methods to reduce medicine proportions to achieve their individual targets. Besides reducing medicine sales and increasing non-medicine sales, there is little opportunity for doctors in Chinese public hospitals to influence medicine proportions through other practices (e.g., selecting patients) because of the stable operating environment and the strict hospital and government rules. These features help our study avoid being affected by unobservable managerial or employee practices. Further, the control and operating environment in our setting is homogenous across departments and stable across time, which enables us to examine our research questions throughout multiple periods with the contextual factors controlled. Finally, using performance, target, and personnel data at department and individual levels, we are able to conduct panel analyses as well as an event study using the 2015 government policy about medicine proportions. Overall, this setting provides us with a useful and rich dataset to investigate our research question. The figure in the Appendix summarizes the structure and key features of our research context.

4. Hypotheses

4.1. Manager Narcissism and Target Level

Narcissistic managers may set high targets to pressure employees to work hard and demonstrate high performance without considering that these targets may lead to dysfunctional behaviors. This is because

high employee performance can usually bring managers benefits such as bonuses, opportunity for promotion, and attention from others in the organization. For example, in our setting, managers whose department achieves a lower medicine proportion receive higher performance bonuses, compliments from senior directors of the hospital, and recognition from peer managers. Narcissistic managers are likely to prioritize such achievements and benefits over rules, ethics, and others' interests (Paulhus and Williams 2002; Chatterjee and Hambrick 2007). To attain these achievements and benefits to fulfill their inflated sense of self, narcissistic managers may set high targets for their subordinates to motivate high performance. Further, narcissists tend to be overconfident and dominant in their decision making (Campbell, Goodie, and Foster 2004; Young et al. 2015; Ham et al. 2017). Such personalities are less willing to take advice or accept negative information about themselves or their decisions (Campbell, Goodie, Foster 2004). If performance targets set by narcissistic managers turn out to be ineffective or dysfunctional, they are less likely to attribute it to their decisions or adjust the targets by taking others' advice. This could hinder narcissistic managers from "correcting" their performance targets in the long term. Overall, we predict a positive link between manager narcissism and target level:

H1: *The degree of managers' narcissism is positively associated with the target level that managers set for their subordinate employees.*

4.2. Indirect Effect of Manager Narcissism on Employee Dysfunctional Behavior

A high target level chosen by narcissistic managers may lead to undesired behaviors of their subordinates. While high targets can motivate high performance by increasing employees' effort intensity and duration (Locke and Latham 1990; Birnberg, Luft, and Shields 2006; Arnold and Artz 2015; Ioannou, Li, and Serafeim 2015), employees may engage in undesired behaviors when their performance targets are set too high and cannot be easily achieved through desired practices. Prior research documents two alternative types of undesired behaviors that employees may undertake. On the one hand, a high target level may cause anxiety and distract employees' attention away from their tasks (Beilock et al. 2004; Markman, Maddox, and Worthy 2006). Employees may stop working hard if they perceive their targets as too difficult to achieve

(Erez and Zidon 1984; Locke, Latham, and Erez 1988). That is, high performance targets may result in low motivation and effort of employees.

On the other hand, a high target level may motivate "outside-the-box" thinking. The pressure imposed by high targets could push employees to explore creative ways to meet their targets (Shalley 1995). However, these creative ways can be dysfunctional if they are effective in increasing employees' short-term performance but detrimental to a firm's long-term interests. For example, bonus plans based on earnings targets could lead to earnings management, especially when the original earnings are close to the target (Healy 1985; Guidry, Leone and Rock 1999). Another example is that in response to target ratchetting, employees may "withhold" their effort to avoid receiving higher targets in the future (Indjejikian, Matějka, and Schloetzer 2014; Bouwens and Kroos 2017). Further, psychology research suggests that receiving high targets creates a high cognitive load that focuses employees' attention narrowly on target attainment. Given this narrow focus, employees care less about rules, ethics, and others' interests, and become more willing to engage in dysfunctional behaviors to achieve their targets (Barsky 2008; Welsh and Ordóñez 2014a, 2014b). Linking employees' compensation to performance targets could further reinforce this narrow focus on target attainment and exacerbate employees' dysfunctional behaviors (Schweitzer, Ordóñez, and Douma 2004; Cadsby, Song, and Tapon 2010). Anecdotal evidence also suggests that high performance targets and target-based incentives are a key driver of employee dysfunctional behavior in practice (Carucci 2016; Niven and Healy 2016).

We expect that target level is associated with employee dysfunctional behavior in our setting for two reasons. First, because of government policies, the medicine-proportion targets in our setting are challenging and doctors struggle to meet these targets. A higher target level may focus doctors' attention more on target attainment and less on the reputation of the hospital and the interests of the patients. Second, the medicine-proportion target is of great importance in our setting and is linked to doctors' performance bonuses. It means that when receiving high targets that are too difficult to achieve through desired practice (i.e., reducing the use of medicine), doctors are unlikely to "give up". Instead, they may engage in

dysfunctional behavior (i.e., increasing non-medicine sales) to achieve these targets. Thus, we expect that target level is positively associated with employee dysfunctional behavior:

H2: *Target level is positively associated with employee dysfunctional behavior.*

4.3. Direct Effects of Manager Narcissism on Employee Dysfunctional Behavior

Besides the indirect effect of setting performance targets, managers may directly influence the dysfunctional behavior of their subordinates. In daily practice, narcissistic managers may create a working environment that tolerates dysfunctional behaviors that can lead to high performance-measurement outcomes. In particular, narcissistic managers may exert less effort in detecting or preventing dysfunctional behaviors, and focus more on encouraging employees to employ any possible means to achieve high performance. In our setting, it means that narcissistic managers may tolerate or even encourage doctors to give patients unnecessary treatments and examinations to increase non-medicine sales to achieve a lower medicine proportion. Therefore, we expect that after controlling for target level, manager narcissism still has a direct positive association with employee dysfunctional behavior:

H3: *After controlling for target level, manager narcissism is positively associated with employee dysfunctional behavior.*

Taken together, we expect that manager narcissism has both direct and indirect associations with employee dysfunctional behavior. Figure 1 presents our theoretical framework.

[Insert Figure 1 here]

5. Method

5.1. Data and Sample

We examine our hypotheses using archival data of performance targets and outcomes, as well as personal data of department managers and doctors.[8] Our sample includes the data of 18 clinical departments over the period of February 2014 to December 2016.[9] During our sample period, none of the 18 departments

[8] We obtained ethic approval for our collection and use of the field data.

[9] The hospital does not require managers of seven departments to set performance targets for their doctors because (1) some of these departments need to use large amounts of medicines to treat patients who have very serious illness

experienced a change of manager. In our main analyses, we construct a manager-month matched dataset that includes a total number of 665 observations to examine managers' narcissism and their choice of target level. In addition to the main analyses conducted at the manager level, we also conduct additional analyses at the subordinate doctor level. Our sample for these analyses includes all 132 doctors from the 18 departments. The sample period is the same as the main analysis. In total, there are 4,620 observations for the additional analyses at the employee level.

5.2. Measurement

5.2.1. Manager narcissism (signature and sig_dum)

Following prior studies, we use managers' signature size as a proxy for the degree of their narcissism. Recent studies document a link between the size of managers' signature and their degree of narcissism (Ham et al. 2017; Ham, Seybert, and Wang 2018). Using experimental settings, these studies find that signature size captures individuals' sense of self and significantly relates to the scores they received in the Narcissistic Personality Inventory 40 (NPI-40) scale. These findings are consistent with the psychology literature suggesting that signature size reflects individuals' self-importance and captures their narcissism (Kettle and Häubl 2011; Ng, Tam, and Shu 2013; Lee, Gregg, and Park 2013). Thus, we use signature size to measure the degree of manager narcissism.

We obtain department managers' signatures from a hospital document which was signed by department managers in 2016. Every time the hospital announces important information such as a new policy, all department managers are required to sign a document to acknowledge that they received and understood the information in the announcement. The document presents a table that includes the name of all the departments and their respective managers. Next to the name of each department manager, there is a given space for the manager to sign. The space given to each manager is of equal size. Using these signatures to measure the degree of managers' narcissism has two advantages. First, managers' signatures on each

(e.g., the department of intensive care); (2) some of these departments do not use medicines in their treatments (e.g., the department of rehabilitation); or (3) some of these departments need to attract certain types of doctors who are in short supply in the Chinese labor market (e.g., ophthalmologists and pediatricians). We also exclude the Emergency Room (ER) because its use of medicine and non-medicine treatments is volatile over time and unpredictable.

document are comparable because all the managers sign the same document for the same purpose. Second, the managers did not know their signatures would be used to measure their personal traits when signing on the document. This means that the managers' signatures on the document are likely to "naturally" reflect their self-importance without being driven by other psychological factors. Overall, using these signatures enables us to minimize the noise in our measurements.

Following prior studies (Ham et al. 2017; Ham, Seybert, and Wang 2018), we construct our narcissism measure based on the space and complexity of managers' signatures. We first measure the space taken by each manager's signature. All signatures are in Chinese, and it is reasonable that names with more strokes (i.e., more complex) are likely to occupy a larger space. We divide the space of the signature by the number of strokes in the name, and use the outcome to construct a continuous variable of signature size (*signature*).[10] Besides signature size (*signature*), we also create a dummy variable (*sig_dum*) based on the median of the signature sizes in our sample. The dummy variable enables us to differentiate and compare high-narcissistic and low-narcissistic managers.

Even though using signature size to measure the degree of individuals' narcissism has been validated in prior research, in light of the central place of this construct in our study, we sought to provide additional evidence of validity. In particular, we examine the correlation between signature size and another two variables that relate to individuals' narcissism, namely, facial height-to-width ratio and tone in self-description. The first variable is individual's facial height-to-weight ratio, which reflects their testosterone level (Lefevre et al. 2013). Psychology research shows that individuals' testosterone level has a positive association with the degree of their narcissism, but not with the other two traits in the Dark Triad of personality (i.e., Machiavellianism and psychopathy) (Pfattheicher 2016). Biology research finds that individuals' facial height-to-width ratio is positively associated with their dominance and aggression, and this association is significant for both men and women (Lefevre et al. 2014). Recent research in accounting uses individuals' facial height-to-weight ratio as a proxy for their decision-making style (Jia, van Lent, and

[10] Besides using strokes, we also divided the space of managers' signatures by the number of characters in in their names. The results remained similar using this approach.

Zeng 2016). The second variable is the positive tone in individuals' self-description. Narcissists hold an overly positive view about themselves. They believe that they are more intelligent and attractive than they actually are, and that they are superior to others (Paulhus and Williams 2002; Olsen, Dworkis, and Young 2013). In fact, most questions in the NPI-40 survey measure how positively the respondents view themselves (Kubarych, Deary, and Austin 2004). In our setting, each department manager was required to write a description about themselves which was to be posted publicly in the hospital and on its website. The hospital provided managers with a general guideline about the format of the self-description. Some managers strictly followed the guideline by briefly introducing their specialty and experience, while others used one or more positive terms to describe themselves (e.g., "successful", "leading", and "famous"). We measure the positive tone in managers' self-description by counting the number of the positive terms that appear in their self-description. We find that the size of managers' signature is highly correlated with their facial ratio ($\rho = 0.70$, $p < 0.01$). In comparison, the correlation between mangers' signature and their positive tone is lower but highly significant ($\rho = 0.15$, $p < 0.01$). We also find that all of the three measures load into the same factor when conducing a factor analysis (average loading = 0.63). These findings suggest our measure (i.e., signature size) is likely to capture the degree of managers' narcissism. The results of these analyses are presented in the Appendix.

5.2.2. Target level (target_level)

We measure performance-target level based on (1) the individual targets that managers set for the doctors in their department and (2) the department target set by the hospital for each department:

$$target\_level_{it} = -(average\_individual\_target_{it} - department\_target_{it}) \div department\_target_{it}$$

Every month t, each department manager i specifies a medicine-proportion target ($individual\_target_{jt}$) for each of their subordinates j. This individual target is calculated as the proportion taken by the medicine sales in the total sales that a doctor is expected to generate. For each month t, we calculate the average of all the individual targets ($average\_individual\_target_{it}$) set by manager i. The average of the individual targets captures the overall target level chosen by managers for their subordinates. Given that the nature of the task (i.e., the type of the treatments provided in a department) may influence the medicine proportion

of a department, we adjust managers' choice of target level using the department target (*department_target*$_{it}$) set by the hospital for their department. The department target is set by the hospital to each department based on the nature of its task and is time-invariant unless there is a change in the government policy. That is, the department target captures the underlying differences between different departments. We measure the extent to which the average target level chosen by a manager deviates from their department target (*[average_individual_target*$_{it}$ *– department_target*$_{it}$*] ÷ department_target*$_{it}$*).* In our setting, a lower medicine proportion is more difficult to achieve. Therefore, we construct our target-level variable using the inverse of this deviation. A higher target-level variable (*target_level*) means that a manager sets more difficult performance targets for doctors in their department relative to the department target set by the hospital.

5.2.3. Employee dysfunctional behavior (other_sales)

We measure employee dysfunctional behavior using the non-medicine sales (*other_sales*) generated by department *i* at month *t*. As explained earlier, doctors in Chinese hospitals can increase their performance-measurement outcomes (i.e., achieving lower medicine proportions) through the dysfunctional behavior of charging their patients for unnecessary non-medicine fees. Although we cannot observe or capture these behaviors directly, they are reflected in the amount of non-medicine sales generated by a department. If doctors in a department charge more unnecessary non-medicine fees, the non-medicine sales of that department will be higher. Therefore, we use the non-medicine sales (*other_sales*) generated by each department in each month as our measure for employees' dysfunctional behaviors. We take the natural logarithm of the original non-medicine sales to increase the normality of its distribution.

Besides employees' dysfunctional behaviors, non-medicine sales may also be affected by other factors, such as department features (e.g., department size and specialty) and the number of patients. Our discussions with the management team and doctors of *Spirit* suggest that the two key drivers of non-medicine sales are seasonality and department size. We control for these two variables as well as other managerial and department features that may explain the variation in the non-medicine sales.

5.2.4. Control variables

We include several control variables in our empirical models. First, we control for the characteristics of department managers, including age (*m_age*), gender (*m_gender*), education (*m_edu*), tenure (*m_tenure*), job title (*m_title*), and indicator for the Chinese Communist Party members (*m_politics*). We control for these characteristics when examining managers' choice of target level and the dysfunctional behavior of employees, give that these variables may influence managers' leadership style, their choice of target level, and the subsequent behaviors of their subordinates.

We also control for the department targets (*d_target*) set by the hospital for each department. This target is set by the upper-level management of the hospital based on tasks of each department and is time-invariant most of the time. The only change occurred in May 2015, when the hospital systematically lowered the targets for all departments in response to the announcement of a government policy. We control for the department target when examining employee dysfunctional behaviors because it captures the difference between different departments. We do not control the department target when examining the managers' choice of target level, given that we have already incorporated it in our measurement of managers' choice of target level.

Further, we control for the size (*d_size*), average age (*d_age*)[11], average education level (*d_edu*), and percentage of specialists (*d_expertrate*) of each department. These departmental features may influence the number of patients and the sales generated by a department. Given that we use non-medicine sales to measure employee dysfunctional behavior, we control for these variables when examining employee dysfunctional behavior. We also control for two indicators, *proctology* and *encephalopathy*. In our setting, there are four departments about proctology and two departments about encephalopathy. The four (two) departments of proctology (encephalopathy) provide the same medical services but are independent from each other in daily operations. In addition, these department receive the same level of department targets.

[11] We also considered the average tenure (*d_tenure*) of doctors within each department. But given that the average tenure is highly correlated with the average age ($\rho > 0.80$), we did not include the average tenure (*d_tenure*) in our empirical models to avoid any multicollinearity issue.

We control for the indicators for these two specialties to address any potential influences that they may have on managers' choice of target level and doctors' behaviors. Finally, we control for time fixed effects (i.e., 36 months from January 2014 to December 2016). Controlling time fixed effects is particularly important for our setting because seasonality is an important factor that explains the number of patients and the amount of sales.

5.3. Descriptive Statistics

Panel A of Table 1 presents the descriptive statistics of our test variables. The statistics show that natural logarithm of non-medicine sales (*other_sales*) has a mean (median) of 12.36 (12.41) and a standard deviation of 0.89. The mean (median) of the target-level variable (*target_level*) is 0.13 (0.10) and the value of this variable varies in our sample (s.d. = 0.13, min = −0.53, and max = 0.59). The statistics for managers' signature size (*signature*) are small in scale (mean and median= 0.04), because we divide it by the strokes in managers' name. Additionally, the signature size varies between different managers in our setting (s.d. = 0.02, min = 0.01, and max = 0.10). For managerial characteristics, the average age (work experience) of the managers is approximately 51 years of age (22 years of experience). Approximately half of the managers (51%) are men; most of the managers have a bachelor or master's degree; and 40% have joined the Chinese Communist Party. All the department managers are either senior attending physician or attending physician. For department features, the average level of department targets set by the hospital is approximately 39%. The average size of the department is approximately seven to eight doctors. The average age of the doctors is 38 years old. Most doctors have a master's or higher degree, and 62% are recognized as experts in their field.

Panel B of Table 1 compares the departments with high-narcissistic managers and those with low-narcissistic managers. This panel shows that departments with high-narcissistic managers have significantly higher non-medicine sales than those of the departments with low-narcissistic managers. This difference indicates that departments with high-narcissistic managers may have more employee dysfunctional behaviors. High-narcissistic managers set significantly more difficult targets than low-narcissistic managers do. This is consistent with our expectation that manager narcissism is positively associated with target level.

Additionally, high-narcissistic managers tend to be older than low-narcissistic managers. However, apart from age, high-narcissistic and low-narcissistic managers are not different in other characteristics, such as gender, experience, and education level. Further, the characteristics of the departments with high-narcissistic managers are not significantly different from those of the departments with low-narcissistic managers.

[Insert Table 1 Here]

Table 2 presents the Pearson correlations between our variables. The measure for managers' narcissism (*signature*) is positively correlated with the measure for dysfunctional behaviors (*other_sales*). However, the measure for target level (*target_level*) is not significantly associated with *signature* or *other_sales*. A multivariate regression analysis is needed to better understand the association between these variables. Most control variables are highly correlated, given that we adopt a panel dataset in which most of the control variables are time-invariant. However, none of the correlations between control variables are higher than 0.75. We also conduct variance inflation factor (VIF) tests when estimating our empirical models to ensure that the control variables do not cause multicollinearity problems.

[Insert Table 2 here]

6. Empirical Models and Results

6.1. H1: Manager Narcissism and Target Level

We first examine whether there is an association between manager narcissism and target level (H1) by estimating the following model:

$$target\_level_{it} = \beta_0 + \beta_1 signature_i + \beta_2 m\_age_{it} + \beta_3 m\_gender_i + \beta_4 m\_edu_i + \beta_5 m\_tenure_{it} + \beta_6 m\_title_{it} + \beta_7 m\_politics_i + \beta_8 encephalopathy_i + \beta_9 proctology_i + FE_{month} + \varepsilon_{it} \quad (1)$$

Model (1) examines the association between managers' narcissism (*signature*) and the level of the performance targets that they set for their subordinate doctors (*target_level*). We control for the manager characteristics (e.g., gender, tenure, education) that may affect their decisions about target level. We also control for the indicators for the departments that have same task nature and level of department target (i.e.,

encephalopathy and *proctology*). Further, we control for the time fixed effects to address the potential influences of any unobservable factors that affect managers' choice of target level in certain periods. Given that we have addressed the department target (*d_target*) when measuring the dependent variable (*target_level*), we do not control for the department target or other department features in model (1) to avoid "double counting" the differences between departments. When estimating Model (1), we have the standard errors clustered at the department level, given that the target levels chosen by the same manager in different months may be correlated. H1 predicts that managers with a higher degree of narcissism tend to set more difficult targets for their subordinate doctors, that is, we expect β_1 in Model (1) to be positive.

Table 3 presents the results. In particular, Column (1) presents the results for the continuous measure of manager narcissism (*signature*). This column shows that after controlling for managerial and department features, there is a positive association between managers' narcissism and target level ($\beta = 0.71$, $p < 0.10$). Additionally, Column (2) presents the results for the dummy variable that differentiates high-narcissistic and low-narcissistic managers (*sig_dum*). This column shows that high-narcissistic managers set higher targets than do low-narcissistic managers ($\beta = 0.05$, $p < 0.05$). As for control variables, managers' age, gender, and education are significantly associated with the target level that they set for their subordinates. Additionally, the two departments of encephalopathy tend to have higher targets than other departments. Overall, the results presented in Table 3 are consistent with H1, suggesting that the degree of manager narcissism is positively associated with target level.

[Insert Table 3 here]

6.2. H2 and H3: Manager Narcissism and Employee Dysfunctional Behavior

We then examine whether manager narcissism indirectly affects employee dysfunctional behavior through target level (H2) and whether there is a direct association between manager narcissism and employee dysfunctional behavior (H3) by estimating the following model:

$$\begin{aligned} other\_sales_{it} = {} & \beta_0 + \beta_1 target\_level_i + \beta_2 signature_i + \beta_3 m\_age_{it} + \beta_4 m\_gender_i + \beta_5 m\_edu_i + \beta_6 m\_tenure_{it} \\ & + \beta_7 m\_title_{it} + \beta_8 m\_politics_i + \beta_{10} d\_target_{it} + \beta_{11} d\_size_{it} + \beta_{12} d\_edu_{it} + \beta_{13} d\_expert_{it} \\ & + \beta_{14} encephalopathy_i + \beta_{15} proctology_i + FE_{month} + \varepsilon_{it} \end{aligned} \quad (2)$$

Model (2) examines whether target level (*target_level*) is associated with employee dysfunctional behavior, and whether manager narcissism (*signature*) has a direct association with employee dysfunctional behavior after controlling for the indirect effect of target level. We use the non-medicine sales generated by each department *i* in each month *t* (*other_sales*) to measure employee dysfunctional behavior (i.e., charging patients for unnecessary non-medicine fees). To estimate the effect of target level and manager narcissism on employee dysfunctional behavior, we control for other factors that may explain the variations in non-medicine sales. First, we control for manager characteristics (e.g., gender, age, education, experience) that may influence their management style and employees' subsequent behaviors. Second, we control for the department target set by the hospital (*d_target*) because it captures the differences across departments and may also affect the motivation and behaviors of managers and doctors. Third, we control for department features, including the size, average age, average education level, and percentage of experts in each department because these factors are likely to influence the number of patients and the non-medicine sales a department generates. Fourth, we control for the month fixed effects to address any seasonality effect on the level of non-medicine sales. We have the standard errors clustered at the department level when estimating model (2), given that a department's non-medicine sales in different months are likely to be correlated.

If individual doctors did not charge patients for unnecessary non-medicine fees (i.e., no dysfunctional behavior), the level of non-medicine sales (*other_sales*) should be explained only by department features and the time effect. However, if manager narcissism affects employee dysfunctional behavior directly (indirectly), the coefficient on manager narcissism (target level) will be significant. In particular, H2 predicts that higher target level is associated with more dysfunctional behaviors. That is, we expect the coefficient on *target_level* (i.e., β_1) to be positive. H3 predicts that manager narcissism has a direct positive effect on employee dysfunctional behavior. That is, we expect that the coefficient on *signature*, the measure of manager narcissism, (i.e., β_2) is positive.

Panel A of Table 4 presents the results estimated using the continuous measure of manager narcissism (*signature*). We first test the overall effect of manager narcissism by including only manager narcissism as

the independent variable. Column (1) shows that there is a positive link between manager narcissism and non-medicine sales ($\beta = 7.71$, $p < 0.10$). We then examine the direct and indirect links between the two variables. First, we check the *indirect* link which works through target level. Column (2) shows that after controlling department, managerial, and time effects, a higher target level is associated with higher non-medicine sales ($\beta = 0.74$, $p < 0.01$). Column (3) suggests that after controlling for the direct effect of manager narcissism, the association between target level and non-medicine sales remains significant and positive ($\beta = 0.62$, $p < 0.05$). The results presented in Column (2) and (3) indicate that higher target levels are likely to make employees charge more non-medicine fees. Combined with the results presented in Table 3, our findings indicate that a higher degree of manager narcissism is associated with higher performance targets, which in turn leads to more dysfunctional behaviors of employees. These findings are consistent with our prediction in H2 that manager narcissism is indirectly associated with employee dysfunctional behaviors via target level.

Second, we check the *direct* link between manager narcissism and non-medicine sales. Column (3) in Panel A of Table 4 presents the results estimated with both manager narcissism and target level included in the model. This column shows that after controlling for target level as well as manager, department and time fixed effects, a higher degree of manager narcissism is still associated with higher non-medicine sales ($\beta = 7.30$, $p < 0.10$). This finding is consistent with our prediction in H3 that manager narcissism has a direct association with employee dysfunctional behavior.

Panel B of Table 4 presents the results estimated using the dummy variable that distinguishes high-narcissistic and low-narcissistic managers (*sig_dum*). Consistent with Panel A and our hypotheses, Panel B of Table 4 shows that both target level and manager narcissism are positively associated with employee dysfunctional behavior. The robust R-squares of our estimations in both panels are around 86%, suggesting that our independent and control variables can explain most of the variations in the non-medicine sales. Besides using ordinary least squares (OLS) analysis, we also conducted a mediation test based on Krull and MacKinnon (2001). The result of the mediation test is consistent with those presented in Table 4 and suggest

that approximately 10% of manager narcissism's total effect on employee dysfunctional behavior is mediated by target level.

Taken together, the results of our main analyses show that there is a positive association between manager narcissism and employee dysfunctional behavior. In particular, managers with a higher degree of narcissism tend to set more difficult targets, and this eventually leads to more dysfunctional behaviors of employees. These findings are consistent with our predictions in H1 and H2. Besides the indirect association through target level, manager narcissism also has a direct positive association with employee dysfunctional behavior. This finding is consistent with our prediction in H3.

[Insert Table 4 here]

6.3. Robustness Analyses

6.3.1. Manager narcissism and medicine sales

We conduct a range of additional analyses to check the robustness of our findings. A potential concern for the findings of our main analyses is whether non-medicine sales really capture employee dysfunctional behavior. We argue that high non-medicine sales are caused by dysfunctional behavior, that is, by doctors charging patients for unnecessary non-medicine treatments. However, an alternative argument is that doctors use legitimate non-medicine treatments to replace medicines. Both the legitimate non-medicine treatments and the dysfunctional use of non-medicine treatments and examinations can increase *non-medicine sales*. However, these behavior have different implications on the *medicine sales* of a department. Specifically, if doctors increase non-medicine sales to lower their pressure of reducing the use of medicines, medicine sales will *not decrease*. However, if they provide legitimate non-medicine treatments to replace the use of medicines, medicine sales will *decrease*.

We examine which explanation holds in our setting by testing the relationship between manager narcissism and the level of medicine sales. Our dependent variable is the natural logarithm of the medicine sales generated by each department (*med_sales*). The independent variable is manager narcissism and the control variables are the same as Model (2). The results are presented in Table 5. We find that manager narcissism is associated with higher medicine sales ($p < 0.10$). Combined with the results presented in

Table 4, departments with high-narcissistic managers generate higher medicine sales and non-medicine sales than departments with low-narcissistic managers. That is, although departments with high-narcissistic managers generate higher non-medicine sales, their medicine sales are not lower (but actually higher) than those of the other departments. These results rule out the alternative explanation that non-medicine sales capture a legitimate behavior in which employees engage to reduce the use of medicines.

[Insert Table 5 here]

6.3.2. Manager narcissism and department performance outcomes

Besides examining the association between manager narcissism and employee behavior, we also examine how manager narcissism is associated with department performance outcomes. The department performance measure in our setting is medicine proportion. Every month, the hospital sets a medicine-proportion target for each department (i.e., the department target). We examine whether manager narcissism (*signature*) is associated with the likelihood that a department meets its department target set by the hospital (*meet*) using a logit regression model. Table 6 presents the results and shows that the degree of manager narcissism is not significantly associated with the likelihood of that a department meets the target set by the hospital ($p > 0.10$). That is, higher manager narcissism is not associated with better department performance outcomes.

[Insert Table 6 here]

6.3.3. The influence of the 2015 government policy

Besides cross-sectional analyses, we also conduct an event analysis by exploring the potential influences of the 2015 government policy (General Office of the State Council in China 2017) manager's choice of target level and employee behavior. This policy imposes great pressure on hospitals in China in reducing their medicine proportions. As we expect that managers with a higher degree of narcissism tend to set more difficult targets and be more tolerant of dysfunctional behaviors, they may be more responsive to this policy. We examine how manager narcissism is associated with target level, medicine and non-medicine sales, as well as the department performance outcome before and after the enactment of the 2015 government policy.

The results of this event study are presented in Table 7. Column (1) presents the results for target level (*target_level*). It shows that, consistent with the cross-sectional analysis presented in Table 3, high-narcissistic managers tend to set more difficult targets than do low-narcissistic managers ($\beta = 0.04$, $p < 0.05$). Further, in the post-policy period, high-narcissistic managers increased the level of the targets set for their subordinates to a greater extent than the low-narcissistic managers did ($\beta = 0.04$, $p < 0.05$). That is, high-narcissistic managers were more responsive to the 2015 government policy. This result is consistent with our prediction in H1 and suggests that managers with a higher degree of narcissism tend to set more difficult performance targets for their subordinates. Column (2) and (3) present the results for non-medicine and medicine sales, respectively. Specifically, Column (2) shows that although departments with high-narcissistic managers always have higher non-medicine sales than departments with low-narcissistic managers ($\beta = 0.32$, $p < 0.01$), this difference did not change significantly after the enactment of the policy ($\beta = 0.05$, $p > 0.10$). In other words, although manager narcissism is associated with employee dysfunctional behaviors, this association is not magnified by the 2015 policy. There are two possible explanations for this result. First, it may take a longer term than our post-policy sample period for employees to increase their dysfunctional behaviors. Second, there may be a limited room for employees to engage in dysfunctional behaviors so it is hard for the departments with high-narcissistic managers to further increase the non-medicine sales. Further, Column (3) shows that departments with high-narcissistic managers are less effective in reducing the medicine sales than departments with low-narcissistic managers ($\beta = 0.35$, $p < 0.01$), and this difference enlarges after the enactment of the 2015 policy ($\beta = 0.11$, $p < 0.10$). Finally, Column (4) shows that manager narcissism is not associated with the likelihood that a department achieves the department targets set by the hospital, either before or after the 2015 policy.

6.3.4. Performance target at employee level

Our main analyses on manager narcissism and target level were conducted at the manager/department level. As a robustness check, we examine how narcissism influences the targets that managers set for each individual employee (N = 4,620). We find that, consistent with the results of our main analyses, manager narcissism is positively associated with the level of the target that managers set for each of their subordinate

employees. Additionally, we find that manager narcissism is not significantly associated with the variance of target levels within each department. That is, we do not find evidence showing that narcissism could make managers choose more (or less) homogeneous target levels for different employees.

7. Conclusion

We examine how manager narcissism affects employee dysfunctional behavior. Using performance, target level, and personnel data from a field site, we find that manager narcissism is associated with more dysfunctional behaviors of the managers' subordinate employees through a direct effect and an indirect effect via target level. Our findings provide important insights about how employee dysfunctional behaviors occur. Further, we contribute to the management-control literature by documenting the role of managers' narcissism in implementing control mechanisms (i.e., performance targets) and in the behaviors of their subordinates. We also add to the emerging literature on narcissism by demonstrating that the narcissism of middle-level managers affects their control decisions and firms' internal operations.

Our study has important practical implications. Our findings suggest that firms need to be aware of the narcissism of middle-level and lower-level managers. We do not suggest that firms should completely avoid appointing narcissistic managers because they may bring benefits such as higher productivity and creativity (Maccoby 2000). Instead, we advocate firms to balance the benefits and the potential costs of having narcissistic managers based on the nature of their tasks and the control environment.

Our findings are subject to several limitations. First, although our field setting enables us to examine the manager narcissism, target level, and employee dysfunctional behaviors with the contextual factors controlled, it is an open question as to what extent we can generalize the findings obtained from a single research site. It is important to note that by 2018, China had more than 12,000 public hospitals that covered more than 80% of the healthcare services in the country (The National Bureau of Statistics of the People's Republic of China 2018). The insights from our study are at least generalizable to this large and important sector. Second, we cannot directly capture employee dysfunctional behavior using the available data. Our measures of employees' dysfunctional behaviors (i.e., non-medicine sales) also capture other behaviors and factors. We attempted to overcome this limitation as much as possible by including the control variables

that could explain the variations in the non-medicine sales. The high explanatory power of our models suggests that we are effective in controlling the major drivers of the non-medicine sales. Third, due to the non-random assignment of research subjects in our field site, our findings may be subject to endogeneity problems. However, our descriptive statistics demonstrate that departments with high-narcissistic managers and those with low-narcissistic managers are not different in their features. Our event analyses based on the 2015 government policy also support the results of our cross-sectional analyses. These results suggest that our findings are unlikely to be driven by endogeneity issues. Future research may extend our study by overcoming these limitations.

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Appendix A.
Variable Definitions

signature	The size of a manager's signature, measured as the space taken by a manager's signature divided by the number of strokes in the manager's name.
sig_dum	Equals to 1 if a manager's signature size is higher than the median of all managers' signature size, and 0 otherwise.
target_level	The overall target level chosen by a manager. Measured as: $target\_level_{it} = -(average\_individual\_target_{it} - department\_target_{it}) \div department\_target_{it}$ Where *average_individual_target* is the average of the individual targets set by the manager *i* set for their subordinate doctors in month *t*. *Department_target* is the department target set by the hospital to each department. Given that a lower target is more difficult to achieve in our setting, we construct the target-level variable using the inverse of a manager's deviation from the department target.
other_sales	The natural logarithm of non-medicine sales generated by department *i* in month *t*.
med_sales	The natural logarithm of medicine sales generated by department *i* in month *t*.
meet	Equal to 1 if department *i* meet the department target set by the hospital in month *t*, and 0 otherwise.
m_age	The age of a manager. Measured in years.
m_gender	The gender of a manager. Equals to 1 for male managers, and 0 otherwise.
m_edu	The education background of each manager. Equals to 3, 2, 1 and 0 for doctoral, postgraduate, undergraduate and technical college degree, respectively.
m_tenure	The number of years that a manager has been working in the hospital (i.e., *Spirit*).
m_title	The professional title of a manager. Equals to 4, 3, 2, 1 and 0 for the title of senior attending physician, attending physician, fellow, resident, and physician assistant, respectively.
m_politics	Equals to 1 for managers who join the Chinese Communist Party, and 0 otherwise.
d_target	The medicine proportion target assigned by the hospital to each department, that is, the "department target".
d_size	The number of subordinate doctors that department *i* has in month *t*.
d_age	The average age of all the subordinate doctors within department *i* in month *t*.
d_edu	The average education level of all the subordinate doctors within department *i* in month *t*.
d_expertrate	The number of expert specialists within department *i* in month *t*.
facial	The facial height-to-width ratio of a manager.
tone	The positive tone in a manager's self-description, measured by the number of the positive terms that appear in the manager's self-description

Appendix B.
Construct Validity of the Measure for Manager Narcissism

Panel A Correlations between Manager Signature and Other Variables Relating to Narcissism

	Correlation with *signature*
face	0.70***
tone	0.15***

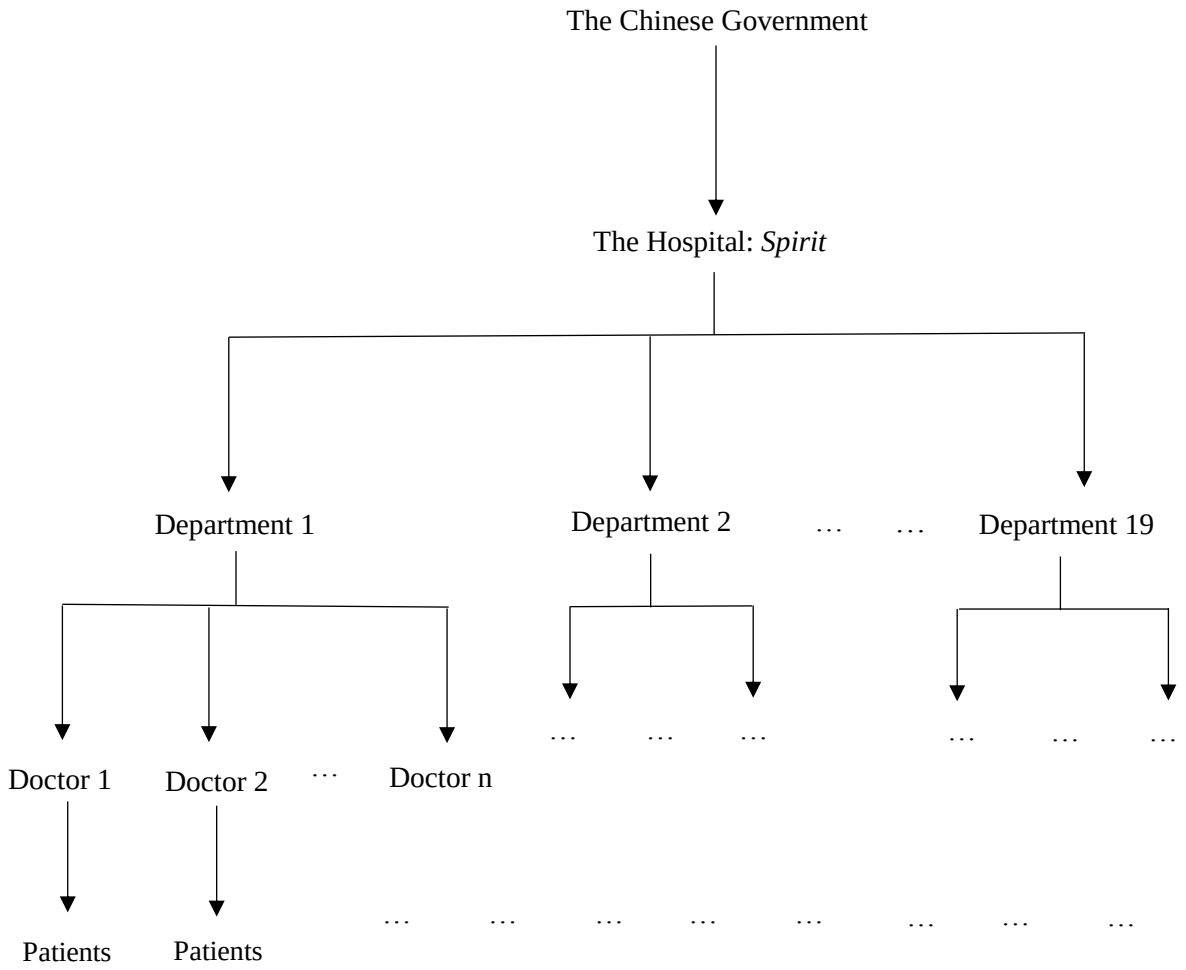
Panel B Factor Loadings of Manager Signature and Other Variables Relating to Narcissism

	Factor Loadings
signature	0.75
face	0.82
tone	0.33

Panel A presents the correlations between managers' signature size (*signature*) and the other two variables relating to the degree of managers' narcissism: facial height-to-width ratio (*face*), and positive tone in self-description (*tone*). Panel B presents the explanatory factor analysis of the three variables.
*, **, *** indicate that the correlation coefficient is significantly different from zero at the 10%, 5% and 1% levels, respectively.

Appendix C.

Research Setting



From 2009, the Chinese government has announced a series of policies to urge public hospitals to reduce their medicine proportion. In May 2015, a government policy was enacted and requires public hospitals in specified urban areas to reduce their medicine proportions to 30% or lower by the end of 2017.

The hospital sets *department* medicine proportion targets for each of its departments based on their task nature and previous performance. The department targets do not vary across time unless there is a change in government policy.

The department managers set *individual* medicine proportion targets for each of their subordinate doctors on a monthly basis.

Doctors can lower their medicine proportions by (1) reducing the use of medicines (i.e., desired behavior) and/or (2) charge patients for unnecessary examinations and treatments (i.e., dysfunctional behavior).

Figure 1

Theoretical Framework

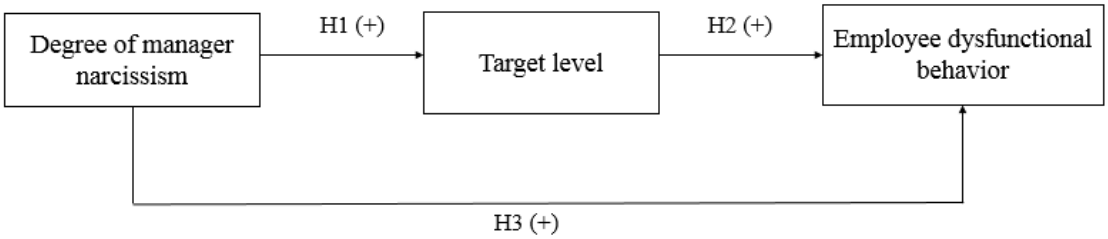


Table 1

Descriptive Statistics

Panel A Descriptive Statistics of Test Variables

Variable	N	Mean	Median	s.d.	Min	Max
other_sales	615	12.36	12.41	0.89	9.35	13.88
target_level	615	0.13	0.10	0.13	-0.53	0.59
signature	615	0.04	0.04	0.02	0.01	0.10
m_age	615	50.66	51.00	4.46	41.00	60.00
m_gender	615	0.51	1.00	0.50	0.00	1.00
m_edu	615	1.63	1.00	0.99	0.00	3.00
m_tenure	615	21.17	22.00	8.19	7.00	37.00
m_title	615	3.94	4.00	0.23	3.00	4.00
m_politics	615	0.40	0.00	0.49	0.00	1.00
d_target	615	39.24	44.00	10.45	25.00	59.00
d_size	615	7.32	6.00	3.52	1.00	17.00
d_age	615	38.14	38.17	2.74	32.00	47.00
d_edu	615	1.64	1.67	0.25	1.00	2.17
d_expertrate	615	0.62	0.67	0.20	0.30	1.00

Panel B Compare Departments with High- and Low-narcissistic Managers

Variable	Low-narcissistic	High-narcissistic	Difference	t-statistics
other_sales	12.27	12.44	-0.17	**-2.39**
target_level	0.12	0.15	-0.03	**-3.09**
m_age	46.89	52.33	-5.44	**-3.23**
m_gender	0.33	0.67	-0.33	-1.41
m_edu	1.78	1.56	0.22	0.45
m_tenure	21.67	18.89	2.78	0.70
m_title	3.89	4.00	-0.11	-1.00
m_politics	0.33	0.44	-0.11	-0.46
d_target	39.67	38.83	0.84	1.00
d_size	7.89	6.78	1.11	0.65
d_age	36.09	37.97	-1.88	-1.54
d_edu	1.70	1.57	0.13	1.03
d_expertrate	0.58	0.66	-0.08	-0.84

Panel A presents the descriptive of the variables used in the main analyses. The sample involves 18 departments from February 2014 to December 2016. Panel B compares the mean of the variables between departments with high-narcissistic managers and departments with low-narcissistic managers. T-statistics that are significant at 10% or lower level are in bold. For definitions of variables, see the Appendix A.

Table 2

Correlations

	1	*2*	*3*	*4*	*5*	*6*	*7*	*8*	*9*	*10*	*11*	*12*	*13*	*14*
1. other_sales	**1.00**													
2. target_level	-0.02	**1.00**												
3. signature	**0.36**	-0.03	**1.00**											
4. m_age	**0.12**	**-0.08**	**0.40**	**1.00**										
5. m_gender	**-0.27**	**0.14**	**0.30**	**0.37**	**1.00**									
6. m_edu	0.02	**0.46**	**-0.33**	**-0.40**	**-0.31**	**1.00**								
7. m_tenure	**0.22**	**-0.19**	0.06	**0.12**	**0.19**	**-0.35**	**1.00**							
8. m_title	**-0.26**	0.05	**0.13**	**0.48**	**0.25**	**-0.34**	0.06	**1.00**						
9. m_politics	**0.41**	**0.16**	**0.30**	**0.15**	**0.10**	0.07	**0.17**	**0.20**	**1.00**					
10. d_target	**-0.37**	**0.30**	**-0.30**	0.04	**0.24**	**0.20**	**-0.14**	**0.33**	**-0.17**	**1.00**				
11. d_size	**0.42**	**0.08**	-0.01	**0.16**	-0.03	-0.04	**0.23**	**0.09**	-0.01	**0.29**	**1.00**			
12. d_age	0.01	**-0.22**	**0.14**	**0.36**	**0.10**	**-0.18**	**-0.22**	**0.08**	**0.08**	**-0.44**	**-0.20**	**1.00**		
13. d_edu	**0.50**	-0.05	-0.02	**-0.26**	**-0.26**	**0.26**	**0.23**	**-0.51**	**0.41**	**-0.23**	0.03	**-0.35**	**1.00**	
15. d_expertrate	**0.08**	**-0.35**	0.02	**0.14**	**0.09**	**-0.13**	**0.08**	-0.05	-0.06	**-0.35**	**-0.22**	**0.73**	**-0.19**	**1.00**

Table 2 presents the Pearson correlations between the variables used in the main analyses. The sample involves 18 departments from February 2014 to December 2016. Correlations that are significant at the 10% or lower level are in bold. For definitions of variables, see the Appendix A.

Table 3
Manager Narcissism and Target Level

	DV = target_level	
	(1)	(2)
signature	0.71*	
	(0.09)	
sig_dum		0.05**
		(0.02)
m_age	-0.00	-0.01**
	(0.25)	(0.02)
m_gen	0.05**	0.04**
	(0.02)	(0.01)
m_edu	0.04*	0.02
	(0.06)	(0.20)
m_tenur+B16e	0.00	0.00
	(0.38)	(0.23)
m_title	-0.01	-0.03
	(0.89)	(0.64)
m_politics	0.03	0.04
	(0.31)	(0.15)
encephalopathy	0.19***	0.20***
	(0.00)	(0.00)
proctology	-0.05	-0.05
	(0.16)	(0.12)
Time Fixed Effects	Controlled	Controlled
constant	0.08	0.33
	(0.73)	(0.28)
Robust R^2	50.07%	51.10%
N	615	615

Table 3 examines the association between managers' narcissism and target level using a cross-sectional analysis. Column (1) presents the results estimated using the continuous measure for managers' narcissism (*signature*). Column (2) presents the results estimated using the dummy variable that indicate high-narcissistic managers (*sig_dum*). *, **, *** indicate that the correlation coefficient is significantly different from zero at the 10%, 5% and 1% levels, respectively. For definitions of variables, see the Appendix A.

Table 4

Manager Narcissism, Target Level, and Employees' Dysfunctional Behaviors

Panel A Continuous Measure of Manager Narcissism (signature)

	DV = other_sales		
	(1)	(2)	(3)
signature	7.71*		7.30*
	(0.05)		(0.06)
target_level		0.74***	0.62**
		(0.01)	(0.05)
m_age	0.07**	0.08**	0.07**
	(0.05)	(0.01)	(0.04)
m_gen	-0.70***	-0.56**	-0.71***
	(0.00)	(0.02)	(0.00)
m_edu	-0.12	-0.07	-0.14
	(0.32)	(0.68)	(0.24)
m_tenure	-0.02	-0.03**	-0.02
	(0.21)	(0.03)	(0.17)
m_title	-0.79	-0.62	-0.76
	(0.15)	(0.34)	(0.15)
m_politics	0.57**	0.64***	0.55**
	(0.04)	(0.01)	(0.04)
d_target	-0.00	-0.02	-0.01
	(0.80)	(0.23)	(0.72)
d_size	0.11***	0.13***	0.11***
	(0.00)	(0.00)	(0.00)
d_edu	0.42	0.05	0.45
	(0.46)	(0.92)	(0.40)
d_age	-0.20*	-0.24**	-0.20*
	(0.07)	(0.02)	(0.06)
d_expertrate	3.19***	3.02**	3.17***
	(0.01)	(0.01)	(0.01)
encephalopathy	0.75**	0.21	0.63*
	(0.03)	(0.72)	(0.06)
proctology	0.65**	0.83**	0.65**
	(0.03)	(0.03)	(0.02)
Time Fixed Effects	Controlled	Controlled	Controlled
constant	16.14**	17.74***	15.89**
	(0.01)	(0.00)	(0.01)
Robust R^2	86.50%	85.59%	86.88%
N	615	615	615

(cont.)

Table 4 (cont.)

Panel B Dummy Measure of Manager Narcissism (sig_dum)

	DV = other_sales		
	(1)	(2)	(3)
sig_dum	0.34**		0.32**
	(0.03)		(0.04)
target_level		0.74***	0.55*
		(0.01)	(0.06)
Control Variables	Included	Included	Included
Time Fixed Effects	Controlled	Controlled	Controlled
constant	19.08***	17.74***	18.70***
	(0.00)	(0.00)	(0.00)
Robust R^2	86.48%	85.59%	86.77%
N	615	615	615

Table 4 examines the direct and indirect associations between manager narcissism and employee dysfunctional behavior. The dependent variable is the proxy for employee dysfunctional behavior, that is, the logarithm of the non-medicine sales generated by each department at each month (*other_sales*). Panel A presents the results estimated using the continuous measure for manager narcissism (*signature*), while Panel B presents the results estimated using the dummy variable that distinguishes high- versus low-narcissistic managers (*sig_dum*). For both panels, Column (1) examines the overall association between manager narcissism and employee dysfunctional behavior (*other_sales*); Column (2) examines the effect of target level (*target_level*); Column (3) examines both the direct effect of manager narcissism and its indirect effect via target level. *, **, *** indicate that the correlation coefficient is significantly different from zero at the 10%, 5% and 1% levels, respectively (two-tailed). For definitions of variables, see the Appendix A.

Table 5

Manager Narcissism and Medicine Sales

	DV = med_sales	
	(1)	(2)
Manager Narcissism		
signature	8.48*	
	(0.05)	
sig_dum		0.41**
		(0.02)
Control Variables	Included	Included
Time Fixed Effects	Controlled	Controlled
Constant	10.87	14.18**
	(0.12)	(0.03)
Robust R^2	84.20%	84.44%
N	615	615

Table 5 examines the association between manager narcissism and the desired behaviors of employees. The desired behavior in our setting is reducing the use of medicines. We measure this behavior using the natural logarithm of the medicine sales (*med_sales*) generated by department *i* in month *t*. Following government policies, lower medicine sales are more desirable to the hospital. *, **, *** indicate that the correlation coefficient is significantly different from zero at the 10%, 5% and 1% levels, respectively. For definitions of variables, see the Appendix.

Table 6
Manager Narcissism and Department Performance Outcomes

	DV = meet	
	(1)	(2)
signature	10.93	
	(0.62)	
sig_dum		0.20
		(0.89)
Control Variables	Included	Included
Time Fixed Effects	Controlled	Controlled
Constant	3.78	8.82
	(0.87)	(0.64)
Robust R^2	37.58%	37.50%
N	615	615

Table 6 examines the association between manager narcissism and departmental performance outcomes. The dependent variable is the likelihood that a department meets its target set by the hospital (*meet*). The independent variable for both columns is the continuous measure of manager narcissism (*signature*). *, **, *** indicate that the correlation coefficient is significantly different from zero at the 10%, 5% and 1% levels, respectively. For definitions of variables, see the Appendix A.

Table 7
Influences of the 2015 Government Policy

	DV = target_level	*DV =other_sales*	*DV = med_sales*	*DV = meet*
	(1)	(2)	(3)	(4)
sig_dum	0.04**	0.32***	0.35***	0.19
	(0.02)	(0.00)	(0.00)	(0.81)
sig_dum × post2015	0.04**	0.05	0.11*	0.02
	(0.02)	(0.39)	(0.07)	(0.97)
Control Variables	Included	Included	Included	Included
Time Fixed Effects	Controlled	Controlled	Controlled	Controlled
Constant	0.36***	19.08***	14.17***	8.83
	(0.01)	(0.00)	(0.00)	(0.41)
Robust R^2	51.59%	86.49%	84.53%	37.50%
N	615	615	615	615

Table 7 examines whether narcissism is associated with managers' reaction to a government policy. The government policy was enacted in May 2015, which requires Chinese public hospitals in specified urban areas to reduce their medicine proportions to 30% or lower by the end of 2017. The first independent variable is the indicator for high-narcissistic managers (*sig_dum*). The second independent variable is the interaction term between the indicator for post-announcement period and the indicator for high-narcissistic managers (*sig_dum × post*). The indicator for the post-policy period (*post*) is not included in the estimation and its effect has been captured by the time fixed effects. The dependent variables include the target level chosen by managers (*target_level*), the non-medicine sales (*other_sales*) and medicine sales (*med_sales*) generated by a department, and the indictor for meeting the department target set by the hospital (*meet*). *, **, *** indicate that the correlation coefficient is significantly different from zero at the 10%, 5% and 1% levels, respectively. For definitions of variables, see the Appendix A.